





Volume 8 Number 9 November 1971

THE ATOM

Published monthly except for July-August and January-February issues by the University of California, Los Alamos Scientific Laboratory, Office of Public Information, P. O. Box 1663, Los Alamos, New Mexico 87544. Second Class Postage Paid at Los Alamos.

CONTENTS:

- 1 Greater Quantities from Deeper Holes
- 5 The Crackpot File
- 11 UC Establishes Internal Audit Staff/ Corps of Engineers Dignitaries Visit
- 12 Defect-Saturated Thermometers
- 15 Turkevich, Rota Named LASL Fellows
- 16 LAMPF Accelerator Design used in Hospital X-Ray Machines
- 18 Photo Shorts
- 20 Langham, Richmond Appointed/ Kligerman Named Assistant Director
- 21 The Technical Side
- 24 20 Years Ago/What's Doing

Editor: Kenneth J. Johnson

Photography: Bill Jack Rodgers and Ivan Worthington

Office: D-403A Administration Building. Telephone: 667-6102. Printed by the University of New Mexico Printing Plant, Albuquerque.

Los Alamos Scientific Laboratory, an equal opportunity employer, is operated by the University of California for the United States Atomic Energy Commission.



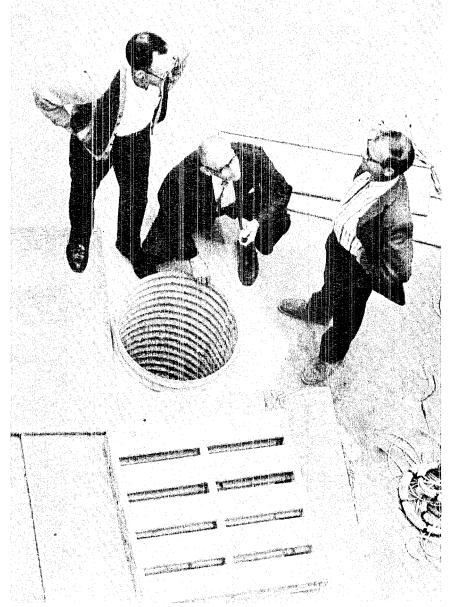
COVER:

The cover photograph shows a magnified view of an amorphous alloy, dye-cut in a configuration to provide minimum mass and maximum surface area. It is being tested to determine its usefulness in resistant thermometers for measuring low temperatures in nuclear reactors. For additional information, read the story which begins on page 12.

Inspecting the 720-foot exploratory hole drilled at TA-46 are Bob Potter, Isotopes Separation section leader, Eugene Robinson, CNC-4 group leader, and B. B. McInteer, associate CNC-4 group leader.

When the transition from DP site to TA-46 is completed, the ICONS will be produced in

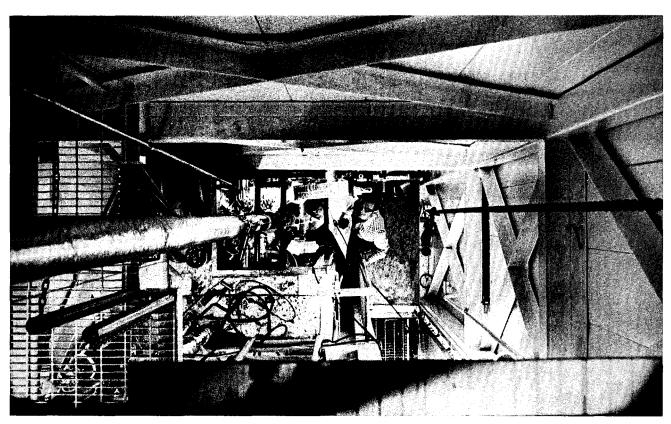
Greater Quantities from Deeper Holes



Over the next three years CNC-4's Isotopes Separation section will be making a gradual transition from DP site to Technical Area 46. The concrete structure with high bay area, just beyond the TA-46 guard station, has been designated for production of greater amounts of the ICONS—Isotopes of Carbon, Oxygen, Nitrogen and Sulfur.

The move is being made to meet increasing demand for the ICONS, brought about largely by clinical and environmental research and development programs. The Los Alamos Scientific Laboratory has been one of the world's largest producers of the ICONS, with the exception of sulfur, for several years. Its scientists are responsible for an increasing number of projects to demonstrate applications of these isotopes.

The transition is a carefully controlled program designed to take place without interrupting either ICONS production or projects in which the isotopes are being used. The first step in this program, according to B. B. McInteer, associate CNC-4 group leader, "... is the expansion of our present facilities so that a residual crew can continue production while other members of

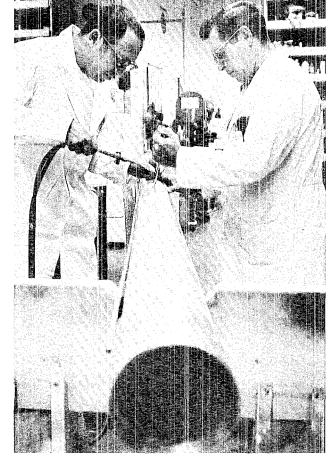


Charles Lehman and Ray Vandervoort work at the base of BIGCO, a distillation column being installed at DP site for the production of 25 per cent enriched carbon-13. the section are developing the new facilities. The facilities at DP site will be shut down when we have two plants in operation at TA-46. We hope to have the first of these in operation in early 1973 and the second in operation in early 1974. This doesn't include the production of sulfur isotopes, although we will eventually be producing them too."

Members of the Isotopes Separation section, under the leadership of Bob Potter are presently concentrating on the expansion of existing facilities, LOCO (LOw COncentration C-13), a distillation column producing better than 99.9 per cent enriched carbon-12, was put into operation this summer. Another column, NOCO (Nitric Oxide COlumn), has recently been put into operation to produce better than 99.9 per cent enriched nitrogen-14 and oxygen-16, and a broth of nitrogen-15 and oxygen-17. This broth will be fed to HINO (HIgh concentration Nitric Oxide) which will produce 99.9 per cent enriched nitrogen-15, 90 per cent enriched oxygen-17 and 99.9 per cent enriched oxygen-18. Construction of HINO has not yet begun.

Construction of BIGCO (BIG Carbon monOxide), a plant to produce 10 kilograms of 25 per cent enriched carbon-13 per year, is under way. This plant will supplement carbon-13 production by COCO (Carbon monOxide COlumn) which produces three kilograms of 90 per cent enriched carbon-13 per year, and BUCO (Back-Up Carbon monOxide), which produces one and a half kilograms of 90 per cent enriched carbon-13 per year. "The 25 per cent enriched carbon-13 BIGCO will put out is good enough for some uses," Potter said. "It's also good feed for the other columns if more highly enriched carbon-13 is needed. BIGCO will be completed around the first of the year."

ENCO (ENriched Carbon mon-Oxide), a column to produce 99.9 per cent enriched carbon-13 from the 90 per cent enriched istotope produced by COCO and BUCO, is also planned. "ENCO is partially built," Potter said, "but it has low priority."

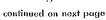


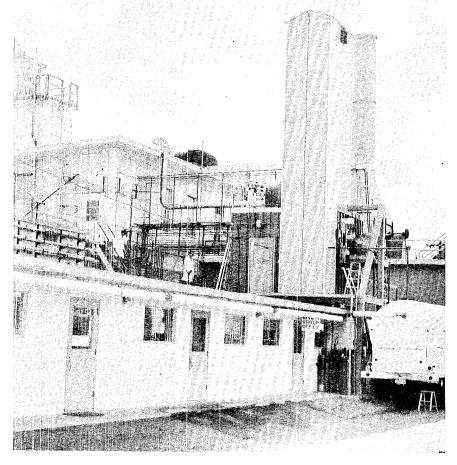
Ramon Romero and Ray Olivas weld feed lines on a 20foot section of the BIGCO distillation column.

From the tower structure, right, ICONS distillation columns used at present pass through the ceiling and into a 100-foot hole beneath the floor of the CNC-4 building at DP site.

"Our columns have all started out as pilot plants, but they have been successful and we've used them for production to keep up with demands for the isotopes," the section leader said. "When we get our production capabilities beefed up to the point a residual force can operate them, we'll start construction of the new plants that will be installed at TA-46."

The plants at TA-46 will be of new design, and will capitalize on the section's experience with distillation columns at DP site. This experience embraces several design features which permit more economy in the operation of distillation plants than has been traditional. One of these is the containment of the columns in holes in the ground. Group CNC-4 has found this method of containment to be far less expensive than building tall tower structures. An exploratory hole has been drilled in the bay area of the TA-46 building. "The drillers went down 720 feet before they hit a stream bed," McInteer said. "This means we'll be working in the





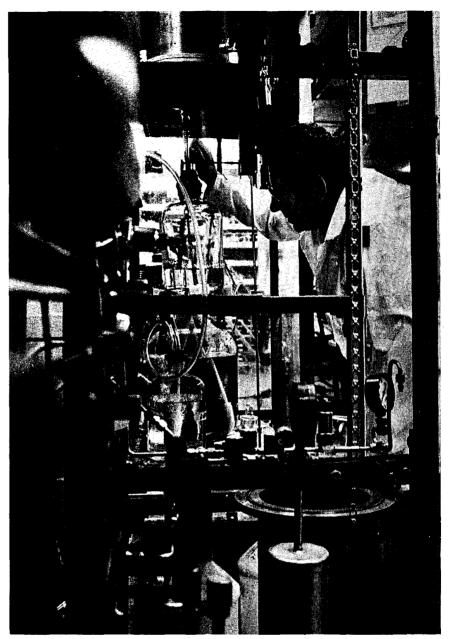
framework of about 700 feet and there is room for a dozen holes, although we have plans for using two at present." McInteer noted that bids for drilling of these two holes have been let and that a contract should be awarded soon.

Another design feature that will be used in the new plants is side-byside distillation. The scientists have found that distillation columns can be constructed that are about half as long as traditional columns if a portion of the distillation activities function side by side.

A single liquid-nitrogen dewar will be used to dispose of the heat of vaporization from three distillation columns. This will be done by stacking the columns in the holes. Previous columns used for isotopes production at DP site have each had their own liquid-nitrogen supplies. Liquid nitrogen is one of the most expensive items in the isotopes production process. By operating three plants from a single source, liquid nitrogen requirements will be reduced by a factor of three below that required by traditional columns. "This represents a savings of about \$200,000 a year," McInteer said.

Each of the stacks will consist of two columns for the production of carbon-13 and carbon-12, and one for the nitrogen and oxygen isotopes—nitrogen-14, nitrogen-15, oxygen-16, oxygen-17 and oxygen-18.

Each of the columns in the stack is longer than any at DP site. This additional length will make the columns larger-volume producers. The carbon-producing columns will each be 280 feet long as compared to the 140-foot ones used at DP site. When in operation, 90 per cent enriched carbon-13 production is expected to be greater than 40 kilograms per year as compared to 4.5 now being produced at DP site. The scientists expect to produce 160 kilograms of carbon-12 per year; 2,600 kilograms of nitrogen-14; 10 kilograms of nitrogen-15; 3,000 kilograms of oxygen-16; 1.1 kilograms of oxygen-17; and 7 kilograms of oxygen-18.



Max Goldblatt operates the chemical separation plant used to separate nitrogen-14 and oxygen-16 from a mixture.

Increased production of the isotopes will make larger amounts available for research and development programs in which the potential of the ICONS can be assessed. Their use has been visualized in a large number of fields including basic chemistry, biology, medicine, agriculture, environmental improvement and other areas where the ability to trace a material containing carbon, oxygen, nitrogen or sulfur is of value.



By Bill Richmond

"Dear Scientist:

Twenty-eight years ago I decided to make a search in the billions of words known as recorded history for the Root of Knowledge. In my opinion, I am the only 'nut' in the world."

At least the second sentence is partly right.

During the past 20 years the Mail and Records group at the Los Alamos Scientific Laboratory has received thousands of pieces of mail that are filed in the same category as the one above—"Crackpots."

Any letter that appears sincere or

asks a valid question is answered. But some are obviously destined for the crackpot file. Example:

"Sirs:

"May I ask you why I am being constantly watched as the so called 'Atomic Bomb Man?' Yet I have not been recognized directly by the government or compensated for submitting this invention to the government.

"I am the basic inventor of this so called 'Atomic Bomb' and I challenge anyone, with the proper authority to ask me how the bomb is actually made.

"This situation has been going on long enough and needs imme-

diate attention, as there is a limit to a man's endurance.

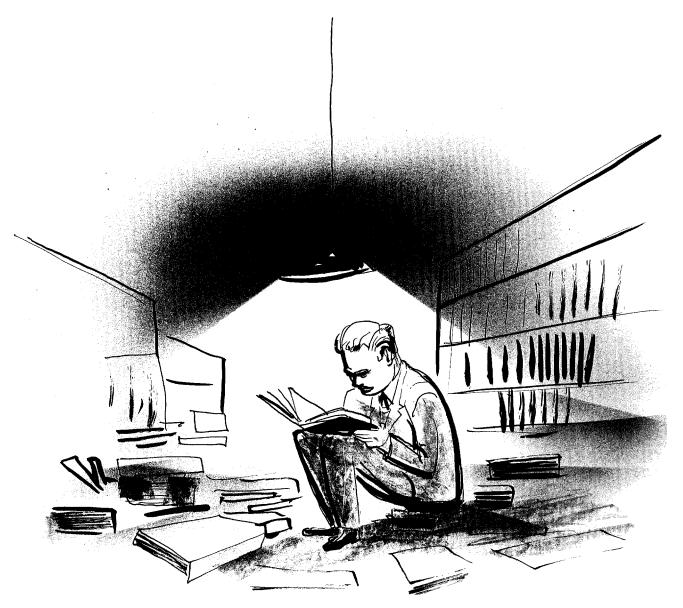
"If you can't do anything about this, please forward this letter to the proper authorities, or I will be forced to take drastic action and expose the whole thing.

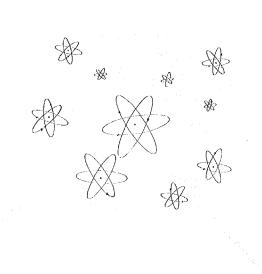
Obediently yours,

And here is a comforting thought for atoms and molecules, as received on a plain, white card:

"The atoms & molecules & their components also go to heaven when they die."

Some people are even anxious to share their dreams with others, especially if there is a chance the late





Albert Einstein has contacted them in their sleep.

"I am a perfectly normal person and have worked for a large hardware store in this city for the past ten years. Last year the first part of April I was sick one morning and did not go to work. It seemed that I could not sleep although I was drousy and I kept hearing someone say, 'Write this, write this.' I finally got up and got a paper and pencil and the inclosed sheet is what I heard. I was told to send it to you at Los Alamos and that it was important that it should not be delayed. It was the day after the death of Einstein and as you can see the initials are his."

Then there are the job-seekers who are sure LASL must desperately need them.

"Dear Sir,

"How very soon to you want me to work for you, making my own Atomic H Bomb Formulas and detonating them for you?

"Kindly let me know where and when I start with you, and salary for a month, or two or three with you.

"You can look up my Patents and you will see I knew Zirconium well in 1939.

"Just after Pearl Harbor Day I am the American Inventor who gave to the U.S.A. the Atomic II. Bomb Formulas and want to make them very quickly to end the war but Golonel Dwight David Eisenhower to Whom I gave them replied, 'No, I will pass this on to the proper people.'

"It was in the Offices of the Chiefs Building, in Washington, D.C., in his Office of Chief of Anti Tank, that Golonel Eisenhower said to me, 'What do you know about fire power, our bullets are not penetrating the German Armor in North Africa, of the German Tanks, Can you help me to penetrate the German Tank Armor, That is my Job and I am sticking to it, I am not interested in saving the lives of Soldiers with your invention, I want more fire power and that is what the Government wants now and will pay for.' He was firm and I had to do his bidding, and I replied 'Write this formula down, apply it to your problem, a fistful of a half pound of it would destroy the greater part of the City of Washington, or any city.' And he wrote the formula down without thanking me.

"In 1917 I received a scholarship

for being one of the ten best Chemistry High School Students in the U.S.A.

"In October 1918 I could have destroyed Germany with my II. Bomb Formula, the basis of which was largely taught to me by Professor Henry Hawling and his words were 'Germany is ready to surrender, it would be inhuman to destroy her with this formula, I will and bequeath my knowledge to you, to build on for profit or patent, or national defense in time of trouble, you will out live me, I leave it to your discretion I do not swear you to secrecy for that is of no use.'

"In 1921 N.Y. Gollege of Dentistry gave to me Honorable Mention for the Best Operative Dentistry Work for Infirmary patients along with my D.D.S. degree.

"I am a mechanic, with this special unsurpassed knowledge in this field of atomic explosives. How soon do we start?"

There is no evidence the gentleman was hired.

Sometimes to answer a letter results in a pen pal. That is, a letter-writer will continue his correspondence if he receives an answer. Witness the following letters from a Milwaukee, Wisc., man:

"Dear Sir:

"The news broadcast yesterday stated you were experimenting with humans and I wish you would comply with my desire to be experimented on.

"I am volunteering for this because I've been wishing there were some opportunities for people to guide some missiles on the Russians because of the grief they cause and never thought of this opportunity.

"In World War II the Silver Star, Bronze Star and Purple Heart medals were awarded to me and have always been a good guy—fought in New Guinea where I received some injuries and wish you'd use me rather than somebody with no disabilities. Flattened my right knee cap playing ball in Australia (slid into a log) and now after 15 years it's bothering me.

"Who knows? Maybe your experiments could cure me. As it is—Well I have a pretty rough time of it and this opportunity is really ideal for me.

"An army doctor told me to stay in the Army but because my Mother was alone I believed my duty was to be with her. Different arrangements could be made now because of the passing of a brotherin-law, I'm sure of that.

"I am 43 years of age and never been married.

"Would have given my life for my country in New Guinea but for the bomb blast resulting in injuries to shoulder and spine and the blow on my head. Sure did seem to frighten me.

"I'll be glad to be experimented on. And I thank you very much."

An answer was sent to the man politely declining his offer. He, in return, answered the answer in part by writing:

"... You know the Russians and Chinese will build missiles that are steered by humans if it is possible to make them like that. Anyway, I heard on news broadcast today about our having some kind of trouble with our missiles so thought I'd write and say that's too bad and to say it is considerate of you to answer my other letter and so promptly.

"P.S. I didn't go in to work today-me back hurts-so listened to news."

A large number of people have inventions which they are sure LASL would be interested in. And we probably would, if there was anything to them. One lady proposed a cancer cure by crossing a cobalt bomb with a "full powered atomic ray" which would produce a fusion reaction which in turn would rebuild the cancerous cells in the human body instead of destroying them.

The anti-gravity machine is also popular among amateur inventors.

Another lady inquired about a new invention which made her hear voices:

"Dear Sir

"Can you tell me by what method, old or new, whether atomic force, nuclear energy, or just plain built-in hi-fi systems or megaphones a person's nervous system can be destroyed without her knowledge, and her rooms filled with voices, and grinding noises. She hears voices on the street, in buses, trains, etc. Yet there is nothing wrong with her except what has been done by these noises.

"This has happened to me and I am most anxious to find out how it is done. As a nuclear scientist you, I hope, have the answer. There are so many minute and hidden methods of destruction nowadays from transistors to things I probably have never heard about, that I can't figure it out. Radioactive waves (I suppose you would call them) can hold my thought to a certain subject, produce tears, or make angry without cause.

"I have thought of hypnotism but believe mostly it is purely atomic or electrical. But in whose hands would the government trust such instruments of destruction and if built in, in what kind of houses. I know the body is responsive to atomic force, nuclear and electrical energy but aside from an atomic explosion how is such force or energy released to allow one person to control another.

"If you can answer these questions I should certainly appreciate it, for I've spent months trying to figure it out."

One of the persistent letter-writers, who invented a new method of air flight called "gravity eliminators," resided in the Camarillo State Hospital in Camarillo, Calif. In one of his letters he said:

"In the secret files of the U.S. Patent Office are the specifications and drawings of my improved machines which I renamed Flying Saucers because they consist of two saucers placed face to face.

"Inside the saucers are cells so arranged that they impregnate THE AIR with centrifucal force at the desired portion of the rim that will creat a lift or thrust of over

80,000 lbs for the 2 sets of saucers. "These are cheaply made of

plastic.

"Because of the disbelief of my claims I have been imprisoned in various Insane Asylums in California for almost 6 years.

"Is the enclosed information of sufficient value to have you send a representative to Camarillo, Cal. to

verify my claims?

"The approval of my NEW METHOD by some one such as your organization would go a long way in convincing these Doctors and Psychiatrists that I am NOT insane or mentally ill. And that my invention is not just a figment of a deseased mind.

"This NEW METHOD is of vital importance to our national defense because it is cheap and the fusalages can be put into bus and truck service thruout the nation. Thus they will be profit making while waiting to be called into defense service.

"They would fool the Communists and a million more vehicles on our highways would not be noticed by Americans let alone the Russians.

"The sets of Saucers can be stockpiled secretely at vantageous locations around Russia and in case of danger each bus or truck in 3 minutes becomes a horrible instrument of destruction capable of round the world flights non stop. Radio and Television controlled these pilotles robots would stop the communists and one million of them would constitute a greater deterrant of another world war than all your armaments.

"This would cost the Government nothing. Our Plan more than pays for itself. Will you investigate it. Only personal contact will reach me."

Some of the missives were not written by obvious "crackpots" but wound up in this file for want of a better place to put them. For instance:

"TO WHOM IT MAY CON-CERN:

"The tools that I mailed you I brought with me from Los Alamos



when I worked there. Actually I stole them, (U.S. Gov't Property).

ANONYMOUS

"P.S. They belong at the huge Supply Depot on the West Mesa and some of them were used and came from a machine shop. Sorry."

For many years LASL carried on an extensive recruiting campaign, in competition with other laboratories, government agencies, private industries and universities. A large number of well-qualified people were obtained by advertisements in technical journals, campus recruiting and word-of-mouth referrals. Unfortunately, some were not so well-qualified:

"Dear Sir:

I was referred to you for a position. What nature of work is this? I am a free lance inventor and get ideas which I think are practical and not to complicated for experiment. I was like the genius who carried the ball, but no place to put it in operation! Any way would like to see you personally. But lack the funds unless guaranteed a place to tide me over until I receive a pay check.

"If there is a place where I can stay until I get a pay I'll come down and work for you! But I dont know anything about laboratorys except chemical valve operations. At present I have no job. But I prefer something in the way of chemical plant operator or similar dutys. If you can let me know soon as possible I will appreciate it."

Years before the Women's Liberation Movement was popular, LASL received inquiries from supernaturally-gifted women:

"Dear sir:

"What jobs have you that a Woman can do? I am a 'Divininess' just got a 500 ft. well water out here on this burning desert (Idaho). 200 ft. cold water.

"My son R.... A.... once applied for work at your Dept. as a Chemist. Remember?

"We are all Gifted people, the 3 of us.



"Could I have some Books on Radiation? I know all about that anyway.

"Sir, look down at your hands. Do you have aches or pains or maybe a Dear Loved one has Cancer or Arthritis or such. Sir, I can Heal one.

> Thank you, (American Healer)"

Over the years LASL has spent a lot of time and effort in producing attractive and informative brochures for recruiting and public information. Thus it comes as a shock to read:

"Dear Sir:

"I happen to pick up your booklet from the office waste basket of the Co. which I had to empty."

He then says he thinks we are trying to communicate with beings from outer space and continues:

"If them space being are reading you peoples minds, I can understand why you got 4,400 children in your city. The people are sexually stimulated when the space beings are reading there minds no?

"I also have been scared by some very strange looking beings that woke me up at night when I was sound asleep. I goes to a psychiatrist he says it was just a dream. But a dream leave when I wake up and I seen these thing after I wake up, and scared me. You can not get scared from your thoughts after you wake up no? I believe beings from outer spaces could make a machine to read mind of humans on earth. Something like T.V. and like radar of the whiperwill, and through reading like dogs use."

This is just a small sampling of the thousands of letters that have poured into the Laboratory and been filed in the crackpot file.

And what about our writer who assured us he was the only "nut" in the world? He closes by saying: "Due to the simple fact I cannot make a living for my family and spend so much time in the search, I have decided my search must end."

And so must ours.



University of California Establishes Internal Audit Staff at Laboratory

At the beginning of this fiscal year, the University of California established an internal audit staff at the Los Alamos Scientific Laboratory. The office, opened under separate contract with the Atomic Energy Commission, is similar to audit offices operated by other AEC contractors.

The audit staff stationed at LASL is headed by Bob Tuffnell, formerly employed by the Sandia Corporation. He is assisted by Selimo Rael, a former employee of the Laboratory's Accounting department.

The two-member staff will coordinate its effort with the AEC auditors, who will continue to directly examine some activities as well as be responsible for review of the University audits.

"We're here to be of service to management," said Tuffnell. "We'll be working closely with the Accounting department since they are responsible for most of the financial reports used by management for internal control. Our function is to

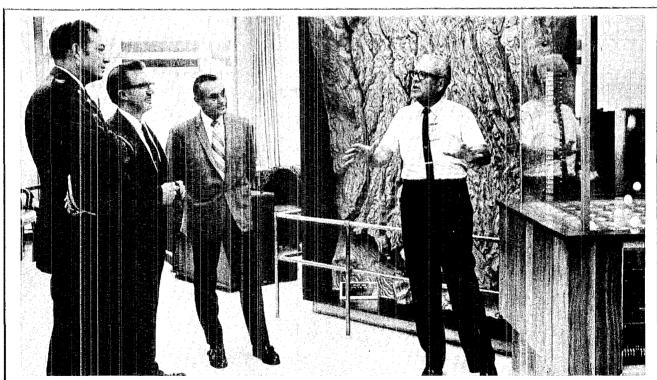






Selimo Rael

measure and evaluate the effectiveness of the established controls for accounting, financial and other operations. Procurement, property management and payroll are some of the major areas of interest to us which will be covered by specific audits during the course of the year."



Robert Porton, ISD-2 group leader, explains highlights of the Bradbury Science Hall to Colonel James Sutton, new head of the Albuquerque Division of U.S. Army Corps of

Engineers, and Gordon Walhood, chief of the Engineering Division for the Corps. The two visitors were accompanied by Philip Reinig, head of LASL's Engineering department.

Defect-Saturated Thermometers for Cryogenic Temperatures



When we buy something new we expect it to be free of defects. Generally, Charles Tallman of N-4 feels the same way, although at present he's become very interested in a material that is defect-saturated.

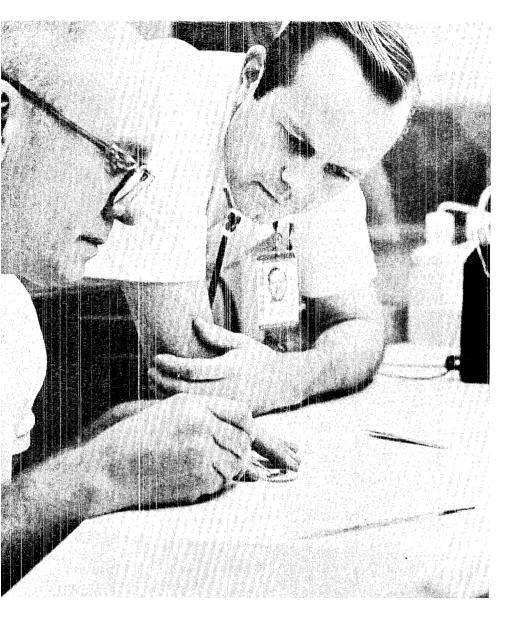
This is a palladium-silicon-chromium alloy which shows promise of making resistance thermometers and strain gauges that will perform effectively at cryogenic temperatures in radiation environments.

For several years, Tallman has been involved in the development of diagnostic instruments for Project Rover, America's endeavor to develop a nuclear propelled rocket capable of interplanetary space travel. At present his efforts are aimed at the development of transducers for more precise measurements of such phenomena as core displacement, stresses and strains, core and coolant temperatures and temperature distribution in nuclear reactors being developed for space vehicles.

"Over the years," Tallman said, "each reactor has been designed better than the one before it. Along with design improvements we want better measurements of what is going on inside the reactor. We need better data. In the past few years

we've been concentrating on instruments that will work with reasonable precision and will get around the problem of radiation damage."

Common practice has been to use thermocouples and platinum resistance thermometers to measure cryogenic temperatures in reactors. Thermocouples are not significantly damaged by the radiation environment within a reactor, but they are rather insensitive to temperatures below about -300 degrees Fahrenheit. For this reason they are difficult to use in measuring temperatures of liquid hydrogen (below -423 degrees Fahrenheit), or liquid



Charles Tallman, N-4, watches as Glen Lindholm, N-7, mounts the small palladium-alloy foil for use in a test of its effectiveness as a resistance thermometer.

helium (below -425 degrees Fahrenheit). Platinum resistance thermometers are sensitive to these cryogenic temperatures but they are susceptible to neutron-radiation damage and to internal gamma heating. Neutrons break down the orderly structure of the platinum and its electrical resistance increases. Gamma radiation can heat the thermometer to temperatures not true to operating temperatures of the reactor. Together, neutron and gamma radiation can result in temperature measurements that are off several degrees.

"Because of these problems with

traditional instruments, the need for a thermometer with less sensitivity to both neutron and gamma effects is obvious," Tallman said.

During his search for candidate materials, Tallman read about a new palladium-silicon-chromium alloy developed by Pol Dunway at the California Institute of Technology. "The alloy has unusual electrical properties. In all other metals, the electrical resistivity decreases with decreasing temperatures, but in this alloy, which is amorphous, the electrical resistivity increases with decreasing temperature.

"Since the problem with plat-

inum resistance thermometers is that radiation disrupts its ordered atomic structure and causes point defects which relate to temperature measurements, the amorphous alloy should provide an accurate way of measuring low temperatures in a reactor. Its atomic structure is disordered and so a little disorder on top of disorder shouldn't matter."

While different than other metals with respect to resistance characteristics, strain, such as stretching, affects the palladium alloy just as it does most other metals. As the ma-



Instrumentation set up at the Omega West Reactor provides Tallman with information on the effectiveness of the palladium alloy as a resistance thermometer.

terial is stretched, its resistance increases, a factor which also makes it a candidate for strain gauges in radiation environments.

Tallman has had both thermometers and strain gauges made from the material and has begun a series of tests to determine the feasibility of using them in radiation fields.

The first of these is a test to determine the effectiveness of the alloy as a resistance thermometer. Tallman had an experimental probe made and placed it in the core of the Omega West Reactor. The probe is a palladium-silicon-chromium thermometer in a container cooled by circulating chilled water. "This is a tough test for the material because it is measuring much higher temperatures than

those it will be used to measure in a reactor," Tallman said. "After 120 hours in the reactor there was 1/100 per cent decrease in resistance which indicates some ordering. On a relative basis, the resistance change in a platinum thermometer would be 230 times greater. We're not concerned about this slight change in resistance since it amounts to a very small error in temperature measurements. Even less change is expected at cryogenic temperatures."

In test preparations he has been assisted by other Laboratory employees. Bob Keil, CMB-6, rolled the material down to a half-mill thick foil to facilitate dye cutting into a configuration with minimum mass and maximum surface area. This makes the thermometer less

susceptible to gamma heating and capable of rapid response to temperature changes. David Eash, CMB-13, calibrated the palladium resistance thermometer against a referenced platinum thermometer. Mounting of the dye-cut foil was done by Glenn Lindholm, N-7.

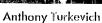
Strain gauges made of the palladium alloy will also be tested in the Omega West Reactor. This will be followed by an experiment at the General Dynamics General Test Reactor at Fort Worth, Texas, where both palladium thermometers and strain gauges will be tested. The Fort Worth experiment is expected to provide the information necessary to prove the feasibility of using the alloy for measuring strain and cryogenic temperatures.

Turkevich, Rota Named LASL Fellows

Director Harold Agnew has named Anthony Turkevich and Gian-Carlo Rota Fellows of the Los Alamos Scientific Laboratory. The two men bring to three the number of Fellows appointed by Agnew. The first was Bernd Matthias, internationally known solid-state physicist, who was appointed earlier this year. Five to seven outstanding scientists will eventually serve the Laboratory in this capacity.

Turkevich, a LASL consultant since 1946 and a principal investigator of Apollo lunar samples, received the Atoms for Peace prize in 1969 for providing "the successful nuclear techniques to analyze the surface of the moon." He was the leading investigator in several Surveyor flights preceding the first manned landing on the moon. His "little gold box," an alpha scattering instrument,







Gian-Carlo Rota

was placed aboard Surveyor 5. This space capsule landed on the moon in 1967 and his instrument sent back information indicating the moon's surface was like earthly basalt. The analysis of lunar samples brought to earth have borne out the accuracy of his instrument.

In 1962 Turkevich was one of five scientists to receive the Atomic Energy Commission's E. O. Lawrence Memorial Award. He was cited for his "contribution to radiochemistry in activation analysis, to analysis of intranuclear cascades, and to utilization of radiochemical techniques throughout atomic energy." In 1967 he was named a member of the National Academy of Sciences in recognition of his distinguished and continuing achievements in original research. He is also a member of the American Association for the Ad-

vancement of Science, the American Chemical Society and the American Physical Society.

He was born in 1916 in New York City, the son of a bishop in the Russian Greek Orthodox Catholic Church who later became the Church's leader in the United States and Canada.

He attended school in New York, received the B.A. degree from Dartmouth College in 1937 and the Ph.D. degree from Princeton in 1940.

During 1940 and 1941 he was a research chemist at the University of Chicago. From 1942 to 1943 he was a research associate at Columbia University. He then returned to the University of Chicago until 1945 when he spent a year as a research physicist at the Los Alamos Scientific Laboratory.

Turkevich returned to the University of Chicago in 1946 as an assistant professor. He was appointed a full professor in 1953 and named the James Franck Professor of Chemistry in 1965. In 1970 he was appointed the James Franck Distinguished Service Professor of Chemistry and in the Enrico Fermi Institute at the University of Chicago (sic).

Rota, internationally known mathematician, has been a consultant at LASL since 1965 and is presently associated with the Massachusetts Institute of Technology. He intends to spend about three months each year at LASL, beginning in the spring of 1972.

Rota was born in Italy in1932. He received the B.A. degree from Princeton in 1953, the M.A. degree from Yale in 1954 and the Ph.D. from the same school in 1956. He was a Sheffield Fellow at Yale from 1953 through 1956.

He was a Fellow of the Courant Institute of Mathematical Sciences at New York University from 1956 through 1957; Benjamin Pierce Instructor in mathematics at Harvard from 1957 through 1959; assistant professor at MIT from 1959 through 1962; and associate professor at MIT from 1962 through 1965. In 1965 he joined Rockefeller University as a professor in mathematics. He returned to MIT in 1967 as a professor in the Division of Applied Mathematics.

Rota is a Fellow of the American Academy of Science and a member of the Mathematical Society, the Mathematical Association, the Society of Industrial and Applied Mathematics, and the Mathematical Union in Italy.

LAMPF Accelerator Design Used in Hospital X-Ray Machines

For a time-span of more than a decade the traveling wave-guide accelerator has been a standard component of hospital x-ray machines used in the treatment of tumors. Now, an increasing number of machines are using a more efficient, compact, stable and economical system developed by scientists at the Los Alamos Scientific Laboratory.

This is the side-coupled cavity accelerator, developed by Edward Knapp, MP-3 group leader, and Darragh Nagle, MP-4 group leader, which is the heart of the Los Alamos Meson Physics Facility. While the traveling wave-guide accelerator transfers electrical energy and the beam of electrons down the same path, the Knapp-Nagle system placed the energy-transfer cavity outside the beam path, astraddle the cells used for beam acceleration. The new system uses less electrical energy to produce a more powerful beam in a shorter distance. High electrical stability allows the machine to run for long hours without beam adjustment and with less attendance. Machining tolerances are less demanding, an important economic factor in the production of any accelerator system.

This totally new and unique cavity system was first used in the Electron Prototype Accelerator to investigate in detail many of the problems associated with the building of the LAMPF accelerator. Not long after the prototype generated its first electron beam, manufacturers of hospital x-ray machines became interested in putting this technology into production. Four manufacturers have since begun developing hospital x-ray machines using the Laboratory's side-coupled cavity design system. Two of them are now marketing machines using this technology. More than 50 of the new units are being used in hospitals in the United States and many more are in various stages of production.

According to Knapp, one of the companies is producing a machine at about half the cost of its comparable predecessors which used a traveling wave-guide accelerator. The same company is building side-coupled cavity accelerators into its industrial radiography units.

"Radiography is used for such things as x-raying welds. The accelerator provides the high energy needed for penetration of heavy bridge structures and pressure vessels," Knapp said.

Another of the manufacturers, Knapp said, has shown interest in the accelerator system because it is smaller and delivers a more sharply defined beam of radiation, at a rate five times greater than the cobalt-60 cancer therapy units it manufac-



tures, without the problem of cobalt-60 source decay.

An important feature of the new machines, Knapp said, is that bending magnets are not required to steer the beam from the accelerator to the patient. The traveling wave-guide accelerator used in conventional x-ray machines is about three feet long, too long to allow vertical placement because floor-to-ceiling distance in many hospital facilities is not great enough. For this reason, the long axis of the accelerator is positioned parallel to the floor in most conventional machines and the beam is bent toward the patient by magnets. In the new units, the side-coupled cavity accelerator is only about a foot long which allows direct accelerator-to-patient delivery of the beam of radiation.

The side-coupled cavity accelerator was designed for both basic research and practical applications, including cancer therapy at the Los Alamos Meson Physics Facility. LAMPF is not expected to produce a full-energy beam until July of 1972, but society is already benefiting from its technology.

Darragh Nagle, MP-4 group leader, and Edward Knapp, MP-3 group leader, look over illustrations of hospital x-ray machines which use the LAMPF accelerator design.

Photo Shorts





Above, a convex mirror, like those strategically placed in department stores as an aid in spotting shoplifters, serves as an effective safety device where roads to the LAMPF site and the Equipment Test Laboratory intersect. The mirror provides LAMPF-bound drivers with a supplemental view of traffic approaching the intersection from the ETL and, conversely, it provides drivers approaching the intersection from the ETL with a supplemental view of traffic bound for the LAMPF site. ISD-7 Photographer Bill Jack Rodgers aimed his camera directly at the mirror to take this photograph.

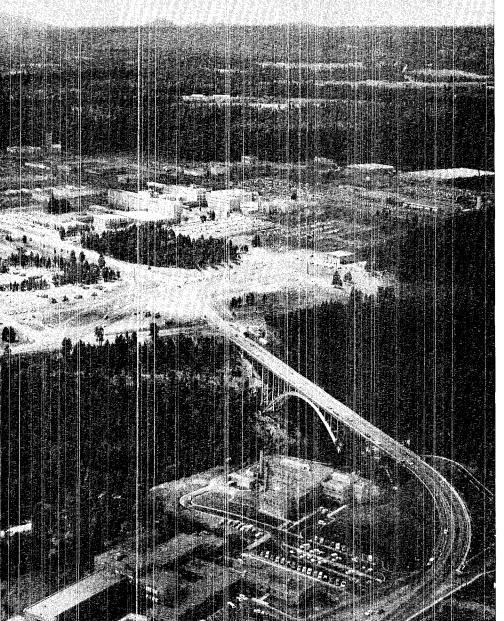
Members of an Advanced Research Projects Agency management group met with LASL officials. In this photograph, Bill Ogle, J-division leader is shown talking with Chuck Gilbert, deputy director of the Division of Military Application, and Vernon Fryklund, assistant director of the Nuclear Monitoring Office. In background are Maurice Katz, W-9, Ken Kressa, Office of Strategic Technology, and Melvin Brooks, associate GMX-division leader. (Photo by Ivan Worthington, ISD-7)

Laboratory Director Harold Agnew presented Antonio Tomas Ortiz, SD-DO, with membership in the Wise Owl Club of America, an exclusive organization sponsored by the National Society for the Prevention of Blindness. The award is given to persons whose eyesight was possibly saved by the wearing of safety glasses. In the opinion of LASL's safety office a chip of metal would have caused the loss of sight of one eye had Ortiz not been wearing safety glasses. (Photo by Bill Jack Rodgers, ISD-7)



Mario Balibrera and Robert Gordon watch as Bob Crook, ISD-7 group leader, mounts a plaque among award-winning photographs on the wall of the main corridor of the Administration building. The plaque is the silver "Cindy" award, one of the most coveted awards given in the field of industrial documentary photography. It is presented in several categories by the Information Film Producers of America. The LASL award was given in the technical category of Governmentproduced films. The film, "Computer Fluid Dynamics," was also one of the highlights of the International Federation of Information Congress 71 at Ljubljana, Yugoslavia. Balibrera was the film's editor, director and writer. Gordon and Roy Stone, also of ISD-7, were the film's cinematographers. (Photo by Ivan Worthington, ISD-7). Below, an aerial photograph showing the Los Alamos Medical Center and Health Research Building in the foreground was taken by Bill Jack Rodgers, ISD-7. Beyond the bridge is the Laboratory's main technical area.







Professor Laurence Martin, Department of War Studies, Kings College, University of London, talks with Bob Shreffler, W-division leader, and Raemer Schreiber, technical associate director at LASL, following a staff member meeting at which Martin was key speaker.

Langham is Associate H-Division Leader, Richmond Appointed to Head Group H-4

Wright Langham has been named associate H-division leader for biomedical research and C. R. Richmond has been appointed H-4 group leader. The appointments were made by George Voelz, H-division leader.

Langham has been employed by the Los Alamos Scientific Laboratory since 1944. Prior to his recent promotion he was assistant H-division leader and group leader of H-4, the biomedical research organization at the Laboratory.

In his new position, he will be responsible to Voelz for management and coordination of the growing and increasingly complex biomedical research activities in H-division, and will assist in long range planning of future biomedical and medical research programs of the Laboratory.

Langham received the Ph.D. degree in biochemistry from the University of Colorado in 1943 and spent a year at the University of Chicago Metallurgical Laboratory before coming to Los Alamos in 1944. He is a pioneer in the field of plutonium toxicology, and is internationally recognized as a leader in virtually every phase of radiobiology research.







C. R. Richmond

Richmond was employed by the Laboratory from 1955 to 1969 when he joined the Atomic Energy Commission's Division of Biology and Medicine.

A radiobiologist, Richmond received the B.A. degree from New Jersey State College in 1952. He received the M.S. degree from the University of New Mexico in 1954 and the Ph.D. in biology from UNM in 1958.

Kligerman Is Named Assistant Director

Morton Kligerman, chairman of the Department of Radiology at Yale University, has been

Morton Kligerman

named Assistant Director for Radiation Therapy at the Laboratory.

Appointed to the LASL post by Director Harold Agnew, Kligerman will also head the Cancer Research and Treatment Center and serve as chief of the Division of Radiation Therapy in the Department of Radiology at the University of New Mexico Medical School.

He was an instructor in radiology at Temple from 1947 through 1948 when he joined the staff at Columbia University, where he was an instructor, assistant professor and associate professor. In 1958 he became professor and department chairman of the Yale Medical School and radiologistin-chief of the Yale-New Haven Hospital. He has been a consulting radiotherapist for the U.S. Public Health Service Hospital at Staten Island, N.Y., since 1952.

Kligerman received the B.S. degree in 1938, the M.D. in 1941 and the M.Sc. in 1948-all from Temple University. He was a captain in the Medical Corps during World War II.

He is a member of the Association for Cancer Research, Cancer Society, College of Radiology, American Medical Association, Association of American Medical Colleges, Radium Society, Roentgen Ray Society, Thoracic Society, Association of University Radiologists, Radiation Research Society, Radiology Society of North America, and the New York Academy.

the technical side

Taken from LASI. Technical Information Reports submitted through ISD-6

The American Astronomical Society's 135th Meeting, University of Massachusetts, Amherst, Aug. 24-27:

"Reduced - Proper - Motion Diagrams" by E. M. Jones, J-10

"Some Aspects About Detecting Microwave Lines in Comets" by W. F. Huebner, T-DOT

"A Portable Precursor to the X-Ray Nova Cen XR-4" by R. D. Belain, J. P. Conner and W. D. Evans, all P-4

Fourth International Symposium on Magnetic Resonance, Weizmann Institute of Science, Rehovot, and Jerusalem, Israel, Aug. 24-31:

"A Study of the Kinetics of the Reaction between Hydrogen and Fluorine by EPR Methods" by S. W. Rabideau, W. B. Lewis, and H. G. Hecht, all CNC-2

Seminar for Surface Physics and Solid State Research Groups, Sandia Corporation, Albuquerque, Aug. 25:

"The Pseudopotential Theory of d-Band Metals" by J. A. Moriarty, CMB-5 (invited)

American Physical Society meeting, Seattle, Wash., Aug. 25-27:

"12Be Ground State Mass" by H. H. Howard and R. H. Stokes, both P-12

"Radiative Capture of Nucleons in the Million-Electron-Volts Region" by D. M. Drake, P-DOR (invited)

"Elastic Scattering of Neutrons from Holium-3 Between 7.9 and 23.7 Million-Electron-Volts" by M. Drosg, D. K. McDaniels, J. C. Hopkins and J. D. Seagrave, all P-DOR, and E. C. Kerr, P-8

Thirteenth International Congress of Refrigeration, Washington, D.C., Aug. 27-Sept. 3:

"Conversion of Para to Orthohydrogen in Nuclear Rocket Radiation Fields" by C. P. Robinson, N- DOT, J. R. Bartlit, J. W. Conant and F. J. Edeskuty, all P-8, and R. W. Stokes, MP-6

"Pressurant Gas Usage in a Large, High Pressure Liquid Hydrogen Dewar" by F. J. Edeskuty and J. R. Bartlit, both P-8, and A. L. Trego, formerly J-DO

"Dissipation in a Flowing Superfluid Helium Film" by D. H. Liebenberg, P-8

"Vibration Enhanced Boil-Off Rate from a Liquid Helium Dewar" by K. D. Williamson, Jr., D. H. Liebenberg and F. J. Edeskuty, all P-8

"Superconductive Energy Storage and Switching Experiments" by H. L. Laquer, P-8, D. B. Montgomery, North Carolina State University, Raleigh, and D. M. Weldon, P-15

"A 100 Kilogauss, Five Centimeter Bore, Rotatable Superconducting Solenoid" by J. D. Rogers, P-8

"Twenty - five Centimeter Bore Superconducting Quadrupoles for LAMPF" by J. D. Rogers and H. L. Laquer, both P-8, W. V. Hassenzahl, MP-6, and J. K. Novak, MP-7

CAMAC Working Group Meeting, Brookhaven National Laboratory, Long Island, N. Y., Aug. 30-Sept. 1:

"Rise Time and Cross Talk Investigations, CAMAC Standard Dataway" by L. R. Biswell and D. R. Machen, both MP-1, and R. E. Rajalia, MP-4

Second International Conference on Polarized Targets, Lawrence Berkeley Laboratory, Berkeley, Calif., Aug. 30-Sept. 2:

"Parameterization of Spin Correlation Experiments" by G. G. Ohlsen and P. W. Keaton, Jr., both P-DOR

"Simultaneous Determination of J and K Quantum Numbers from Neutron-Induced Fission of Polarized Nuclei" by G. A. Keyworth, P-3, and F. T. Seibel, W-8 "Calibration of Polarized Targets with Polarized Proton and Deuteron Beams" by G. G. Ohlsen and P. W. Keaton, Jr., both P-DOR

"Current Status of Polarized Ion Sources" by J. L. McKibben, P-9 (invited)

Esfahan Symposium on Fundamental and Applied Laser Physics, University of Esfahan, Iran, Aug. 30:

"Prospects for Subnanosecond High Intensity Pulses from Gas Lasers" by K. Boyer, J-DO

Air Force Satellite Control Facility, Sunnyvale, Calif., Aug. 31:

"Some Results of the Vela Energetic Particle—ST Detector Experiment" by S. Singer, P-4 (invited)

Summer Advanced Institute and Ninth European Space Research Organization Summer School on Earth's Particles and Fields, Cortina, Italy, Aug. 30-Sept. 10:

"Substorm Particle Behavior" by E. W. Hones, Jr., P-4 (invited)

Working Meeting on Muons in Solid-State Physics, Burgenstock, Switzerland, Sept. 1-3:

"Proposal to Study Chemical Effects in Muon Capture at LAMPF" by J. D. Knight, CNC-11

Fourth International Conference on Atomic Masses and Fundamental Constants, National Physical Laboratory, Teddington, England, Sept. 6-10:

"A Deformable Mass Formula and Fission Data" by P. A. Seeger, W-8 (invited)

Muon Physics Conference, Colorado State University, Fort Collins, Sept. 6-10:

"Muonium Hyperfine Structure" by P. A. Thompson, MP-7

"What Can the Isomer Shift Tell Us About Nuclei?" by G. A. Rinker, P-DOR (invited)

"Nuclear Charge Distribution Parameters Obtained from Muonic Atom Studies" by G. A. Rinker, P-DOR (invited)

"Facilities for Muon Physics at Los Alamos" by P. A. Thompson, MP-7

Fourth United Nations International Conference on the Peaceful Uses of Atomic Energy, Geneva, Switzerland, Sept. 6-16:

"The Los Alamos Meson Physics Facility: A New Tool for Basic Research and Practical Applications" by L. Rosen, MP-DO

"Development of Techniques and Instrumentation for Nondestructive Assay of Fissionable Materials and Field Assay Experience" by G. R. Keepin, A-1, R. L. Bramblett, Gulf Radiation Technology, San Diego, Calif., and W. A. Higinbotham, Brookhaven National Laboratory, Upton, N.Y.

"Research on High-Beta, Theta-Pinch Plasmas" by F. L. Ribe, P-15

Fourth International Conference on High Energy Physics and Nuclear Structure, Dubna, USSR, Sept. 7-11:

"Status of Los Alamos Meson Physics Facility" by L. Rosen, MP-DO (invited)

"Production of Pions by 740 MeV Protons on Various Targets" by D. E. Nagle, MP-DO

"New Measurements of $(\pi^+, 2p)$ Reactions on Light Nuclei" by J. Amato, formerly MP-7, R. L. Burman and R. Macek, both MP-7, J. Oostens, formerly MP-4, W. Shlaer, MP-3, E. Arthur and S. Sobottka, both University of Virginia, Charlottesville, W. Lam and P. Barnes, both Carnegie-Mellon University, Pittsburgh, Pa., P. Fessenden and W. Swenson, both Oregon State University, Corvallis, and D. Axen and M. Salomon, both University of British Columbia, Vancouver

"Cross Sections for (π^*, p) Reactions on 9 Be, 12 C, and 16 O" by J. Amato, formerly MP-7, R. L. Burman and R. Macek, both MP-7, J. Oos-

tens, formerly MP-4, W. Shlaer, MP-3, E. Arthur and S. Sobottka, both University of Virginia, Charlottesville, and W. C. Lam, Carnegie-Mellon University, Pittsburgh, Pa.

"Production of π^+ Mesons by 730 MeV Protons Incident on Various Nuclei" by D. R. F. Cochran and P. A. M. Gram, both MP-6, E. A. Knapp, E. R. Martin, and W. J. Shlaer, all MP-3, D. E. Nagle, MP-DO, H. A. Thiessen, MP-7, R. B. Perkins, P-DO, P. N. Dean, H-4, and E. D. Theriot, formerly MP-4

"The LAMPF Low Energy Pion Line" by R. L. Burman, MP-7, J. Amato, formerly MP-7, and M. Jakobson, University of Montana, Missoula

American Nuclear Society meeting, Wichita, Kans., Sept. 8:

"An Irreverent View of New Design Criteria" by J. R. Lilienthal, CMB-DO

Third Annual Conference on Surface Studies, Sandia Laboratories, Albuquerque, N.M., Sept. 8-10:

"The Exchange Reaction of Lithium Hydride with Deuterium" by D. S. Catlett, W-7

"Kinetics of the Reaction of Plutonium and Deuterium" by D. F. Bowersox, CMB-11

Seminar, Division of Biology, University of Texas, Dallas, Sept. 9:

"Synthetic Polydeoxynucleotides as Probes of Biological Function" by F. N. Hayes, H-4 (invited)

Fifth Annual Instrumentation Fair, Washington, D.C., Sept. 9-10:

"A Fully Interactive Graphics Data Retrieval System" by D. L. Stephenson, J-8

Seminar, School of Medicine, Yale University, New Haven, Conn., Sept. 10:

"A Survey of Image Enhancement Technology" by B. R. Hunt, C-5

The American Chemical Society's 162nd National Meeting, Washington, D.C., Sept. 12-17:

"The Synthesis, Fabrication and Characterization of Solid Solution Uranium-Plutonium Carbide Fuels" by J. L. Green, J. G. Reavis, and M. W. Shupe, all CMB-11

"Analysis of Advanced Reactor Fuels" by G. R. Waterbury and C. F. Metz, both CMB-1

"Preparation of Hollow, Spherical ThO₂ Powders" by M. C. Tinkle, CMB-8

"Classical Trajectories: Is the Force Model Consistent with Experiments?" by N. C. Blais, CNC-4 "Kinetics of the Photolysis of Deu-

"Kinetics of the Photolysis of Deuterium Chloride in Hydrogen" by G. O. Wood, CNC-4

"Metabolism of DNA Precursors in X-Irradiated Chinese Hamster Cells" by R. A. Walters, L. R. Gurley, R. A. Tobey, M. D. Enger and R. L. Ratliff, all H-4

"Continued Protein Synthesis in Suspension Cultures of Chinese Hamster Cells Arrested in Gl by Growth in Isoleucine-Deficient Medium" by M. D. Enger and R. A. Tobey, both H-4

"Products from the Polymerization of dATP Catalyzed by Calf Thymus DNA Polymerase and Employing Polydeoxythymidylate as Template" by F. N. Hayes and R. L. Ratliff, both H-4, and U. Hollstein, University of New Mexico

"Detection and Identification of Mammalian Cells by their Light-Scattering Properties" by P. F. Mullaney and A. Brunsting, both H-4 (invited)

"Single-Particle Effects and Fission Isomers in Heavy Nuclei" by J. L. Norton, TD-3, and J. R. Nix and M. Bolsterli, both T-9

"Systematics and Analysis of Fission Isomer Excitation Functions" by H. C. Britt, P-DOR (invited)

"The Chemical Effects of High Pump Burnup in High Purity, Solid Solution Uranium-Plutonium Carbide Fuel Elements" by J. C. Clifford, formerly CMB-11, and J. O. Barner, CMB-11 (invited)

School of Medicine, University of New Mexico, Albuquerque, Sept. 13.

"A Look at How Radioisotopes are Produced for Use in Medicine"

by H. A. O'Brien, Jr., CNC-11 (invited)

Lecture, University of Scranton, Pa., Sept. 17:

"Biophysics Research at the Los Alamos Scientific Laboratory" by P. F. Mullaney, 14-4 (invited)

International Seminar on Pi Meson Nuclear Interactions, Strasbourg, France, Sept. 20-22:

"New Measurements of (n^* , 2p) Reactions on Light Nuclei" by J. Amato, formerly MP-7, R. L. Burman and R. Macek, both MP-7, J. Oostens, formerly MP-4, W. Shlaer, MP-3, E. Arthur and S. Sobottka, both University of Virginia, Charlottesville, W. Lam and P. Barnes, both Carnegie-Mellon University, Pittsburgh, Pa., P. Fessenden and W. Swenson, both Oregon State University, Corvallis, and D. Axen and M. Salomon, both University of British Columbia, Vancouver

"Cross Sections for (π^*, p) Reactions on Be, 12 C, and 16 O" by J. Amato, formerly MP-7, R. L. Burman and R. Macek, both MP-7, J. Oostens, formerly MP-4, W. Shlaer, MP-3, E. Arthur and S. Sobottka, both University of Virginia, Charlettesville, and W. C. Lam, Carnegic-Mellon University, Pittsburgh, Pa.

Colloquium on Perspectives for Computation of Electronics Structure in Ordered and Disordered Solids, Menton, France, Sept. 20-24:

"The Band Structure Problem in Terms of Scattered Waves" by D. A. Liberman, T-DOT

"Electronic Structure of Copper" by A. M. Boring and E. C. Snow, both CMB-5

Nuclear Medicine and Radiation Biology Laboratory Seminar Series, University of California, Los Angeles, Sept. 21:

"Biomedical Applications of Negative Pions" by W. H. Langham, H-4 (invited)

Fourth Annual Technical Meeting, International Microstructural Analysis Society, Denver, Colo., Sept. 21-24: "The Effect of Morphology on the Characteristics of Particulate Materials" by R. E. Riley, CMB-6

"Sample Preparation and Equipment Problems Associated with Re-Cycled, Purified Atmospheres" by J. H. Bender, CMB-11

"Scanning Electron Microscopy of LMFBR Materials" by K. A. Johnson, CMB-11

"Image Analysis—Part II" by K. A. Johnson, CMB-11

Joint Meeting of the Rocky Mountain Section, American Industrial Hygiene Association, and the Rio Grande Chapter, Health Physics Society, Albuquerque, N.M., Sept. 23-24:

"Routine Respirator Fitting Employing Both Qualitative and Quantitative Test Methods" by D. A. Bevis, H-5

"Protection Factors for Self-Contained Breathing Apparatus" by C. P. Richards, H-5

"Sound Levels from Personal Radiation Monitors" by W. E. Stocum, H-5, and R. W. Davis, P-6

"Skin Protection Against Metals Dissolved in Dimethylsulfoxide (DMSO)" by B. C. Eutsler, Patricia C. Stein, and E. E. Campbell, all H-5

Joint Nuclear and Particle Physics Seminar, University of Pennsylvania, Philadelphia, Sept. 25:

"LAMPF Experimental Area Status Including the First Round of Approved Experiments" by R. J. Macek, MP-7

Eleventh Hanford Biology Symposium on the Biological Implications of the Transuranium Elements, Battelle Memorial Institute, Pacific Northwest Laboratory, Richland, Wash., Sept. 26-30:

"The Biological Implications of the Transuranium Elements for Man" by W. H. Langham, H-4 (invited)

"Plutonium in Man" by E. E. Campbell, H. M. Ide, Jean McClelland, M. F. Milligan, W. D. Moss, and H. F. Schulte, all H-5

"Plutonium Concentration in Tissues of Occupationally Exposed Workers" by E. E. Campbell, W. D.

Moss, M. F. Milligan, H. F. Schulte, and Jean McClelland, all H-5, and L. J. Johnson, H-1

"Plutonium Concentration of Non-Occupationally Exposed Human Lung and Liver Tissues" by W. D. Moss and E. E. Campbell, both H-5

Geological Society of America, Penrose Conference on Fracture Mechanics and Earthquake Source Mechanisms, Aspen, Colo., Sept. 27-30:

"Geothermal Energy" by B. B. McInteer, CNC-4 (invited)

International Colloquium on the Study of Crystalline Tranformations at High Temperature Above 2,000°K," Odeillo, France, Sept. 27- Oct. 1:

"The Order-Disorder Transformation of Ta₂C" by A. L. Bowman, N. H. Krikorian, G. Rupert, all CMB-3, and N. G. Noroson, P-2

Eleventh Conference on Thermal Conductivity, Albuquerque, N.M., Sept. 28-Oct. 1:

"Simplification of Differential Temperature Calibration and Emittance Measurements in Scanning Calorimetry" by L. W. Ortiz, H-5, and R. N. Rogers, GMX-2

"The Heat Pipe at Los Alamos" by J. E. Kemme, N-5 (invited)

"Thermal Diffusivity of Molybdenum and Tungsten Between 20 and 2,000°C" by K. W. R. Johnson and J. F. Kerrisk, both CMB-11

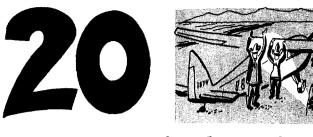
"Analysis of Heat Pulse Propagation in Solid ³He" by W. C. Overton, Jr., P-8

"Flash Diffusivity in Cylindrical Coordinates" by H. D. Murphy, N-7

"A Method for the Simultaneous Determination of the High Temperature Thermal Conductivity and Thermal Diffusivity" by P. Wagner, N-7, B. L. Buzbee, C-4, and F. W. Dorr, C-6

U. S. Transuranium Registry Meeting, Battelle Memorial Institute, Pacific Northwest Laboratory, Richland, Wash., Sept. 30-Oct. 1:

"Studies at Los Alamos of Employees with Long-Term Plutonium-239 Depositions" by W. H. Langham, H-4 (invited)



years ago in los alamos

Culled from the Nov., 1951, files of the Los Alamos Herald by Robert Porton

Unauthorized Plane Lands at Airport

Completely unaware of where they were, a Texas couple who set their light plane down at the Los Alamos airport, in one of the few unauthorized landings ever made here, took off yesterday very much enlightened. Members of the Protective Force, realizing the craft was in trouble, turned on the field's landing lights and signaled the plane to land. Mr. and Mrs. Edgar Cupp of Fort Worth, landed after flying over the restricted air space above Los Alamos for about ten minutes. The pilot said he had been blown off course by heavy winds and had less than three gallons of gas in each tank. The couple was taken to Protective Force headquarters and questioned for nearly an hour by Inspector Donald Dickason, and then spent the night at the Lodge.

Personnel Security Head Named

The promotion of W. V. Ortiz as chief of the personnel security branch of the AEC's Security Division was announced. Ortiz, a native New Mexican, succeeds H. Jack Blackwell, who switched to SFO headquarters in Albuquerque.

Teller Leaves for Teaching Post

Edward Teller is departing Los Alamos next week to return to his teaching post as professor of physics at the University of Chicago. The world famous nuclear physicist has been on leave from the University since July of 1949 when he joined the Los Alamos Scientific Laboratory. Although he will resume his teaching duties, he will continue to maintain close contacts with LASL through visits and consultations. During the war he played a prominent part in the development of atomic weapons at Los Alamos.

Hill Civil Air Patrol Notes Anniversary

The Los Alamos Civil Air Patrol joined other squadrons across the nation in observing the tenth anniversary of the organization. Captain William Chambers, Commanding Officer of the Los Alamos Squadron, took the opportunity to point out that the Hill CAP has been active in participating in civic functions. "This year, the CAP aided in more search and rescue missions than ever before," said Chambers, who is also a staff member of the Los Alamos Scientific Laboratory.

what's doing

PUBLIC SWIMMING: High School Pool— Monday through Wednesday, 7:30 to 9 p.m., Saturday and Sunday, 1 to 6 p.m.; Adult Swim Club, Sunday, 7 to 9 p.m.

OUTDOOR ASSOCIATION: No charge, open to the public. Contact leaders for information.

Nov. 6—Cabezon Peak, Ken Ewing, 662-

Nov. 13-14—Capulin Canyon, Dorothy Hoard, 672-3356

Nov. 25-28—Navajo Canyons, Ariz., or Escalante Canyon, Utah, Walter Green, 662-3203

Nov. 25-28—Big Bend (river trip), leader needed, 672-3203

SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria. For information call Brant Calkin, 455-2468 Santa Fe.

LOS ALAMOS FILM SOCIETY: 7:30 p.m., Civic Auditorium. Admission: Members— \$.50, others, \$2. Nov. 24—"Stolen Kisses."

RIO GRANDE RIVER RUNNERS: Meetings scheduled for noon, second Friday of each month at South Mesa Cafeteria. For information call Joan Chellis, 662-3836.

LOS ALAMOS SAILORS: Meetings at noon, South Mesa Cafeteria, first Friday of each month. For information call Dick Young, 662-3751.

MOUNTAIN MIXERS SQUARE DANCING CLUB: Mesa School, 8 p.m. For information call Florence Denbow, 662-5014. Nov. 6—Caller to be announced. Nov. 20—Bob Roush, Durango, Colo.

MESA PUBLIC LIBRARY:

Through Nov. 9-Preview of Children's Book Week

Nov. 10-24—Art Council Crafts Fair of Northern New Mexico

Nov. 16-Dec. 7—Los Alamos Geological Society display

Nov. 23-Dec. 28—Frank Harlow, paintings

NEWCOMERS CLUB: November 17, 6:30 p.m., Jemez Room, Fuller Lodge, tasting party and election. For information call Sally Jacoby, 662-4862.

LOS ALAMOS CONCERT ASSOCIATION: Nov. 3, 8:15 p.m., Civic Auditorium, Helen Vanni, soprano. Season tickets available at door. For information call Marilyn Stevens, 662-4873.

LOS ALAMOS SKI CLUB: Ski Exchange, Nov. 17, 6 to 10 p.m., High School Cafeteria. For information call Margaret Flaugh, 662-6496.



Robert Johnson, assistant secretary of the Army for research and development, center, and Lieutenant General William Gribble, Jr., Army chief of research and development, left, talk with LASL Director Harold Agnew during their recent visit to the Laboratory.

General Bruce Holloway, commander in chief of the U.S. Strategic Air Command, and members of his staff listen as John Bender, CMB-11, explains a data recording system. Holloway toured Laboratory facilities and discussed problems and potentials of SAC with senior members of the LASL staff.

